AMERICAN
DENTAL
JOURNAL

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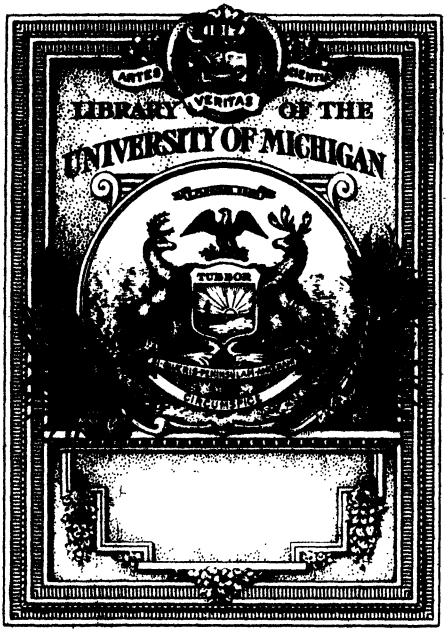

JANUARY 15. YEAR 1914

The AMERICAN DENTAL JOURNAL

BERNARD J. CIGRAND, M. S., D. D. S.
Editor & Publisher & Proprietor.

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Vol. XII
No. 7

Vol. 12 January, 1915 No. 7

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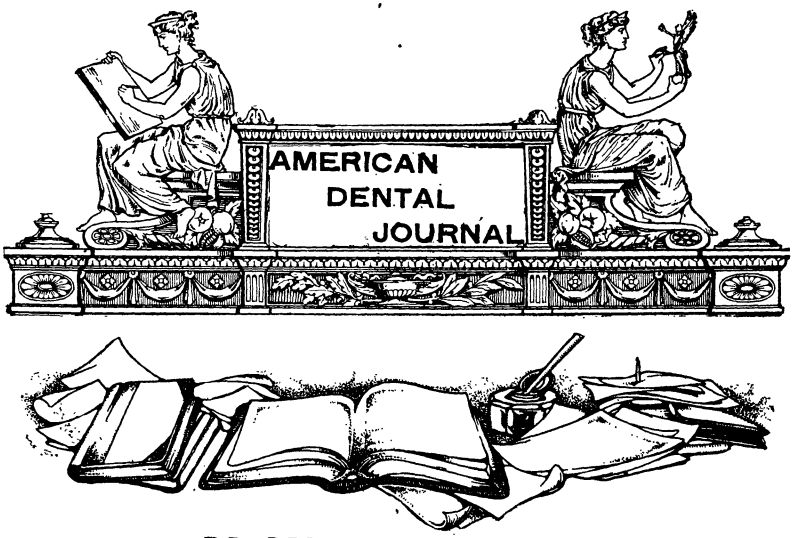


DR. BERNARD J. CIGRAND
EDITOR * * PUBLISHER * * PROPRIETOR

ENTERED AS SECOND-CLASS MATTER AT BATAVIA, ILL.

FEAR OF PAIN—AND DENTAL NEGLECT

PART IV.

The preceding editorials on this subject have been so highly appreciated that the subscribers have requested ye editor to dip his pen deep into the ink and add part three to the series. Being in the hands of my readers, I can say I only take orders —hope I "deliver the goods."

In this chapter I will dwell on "Shock, as Induced by the Dentist." And, let me say in the opening sentence, the English language has so many words which sound alike, and yet mean so differently; and others are not only alike in sound, but are spelled alike, yet do not mean the same. This is well illustrated in an item which appeared in a daily paper, commenting on a banquet given to officers and employees of the American

Electric company," in which it said: "The guests were shocked —not by electricity, but by what the eyes beheld and the ears drank in." Well, the shock I am going to write about is that kind which destroys neural cells and seems to burn up lives.

I recently had a distinguished clergyman call to have some bridge work, or, more properly, assembled crown work, con-

structed. He was not so elderly—and yet I knew he was on the retired list of preachers, and so I gradually led up to the question: "Why should a minister of your mental abilities be placed on the rest shelf?" He smiled, and said: "Well, doctor, that is to me a most tragic story, but since it has as its foundation a dentist and dental office, your question sure is in order." This made it all the more interesting, and I followed up with:

"Let me get the dental story; it may be of great concern to me or other dentists."

He seemed in the mood for conversation, and while I was fitting crowns and taking measurements of remaining teeth, he went on with this tale of dental shadows:

"When I was a young man my parents were always eager to have my teeth in the best of condition. Later, when I attended the literary department of the Northwestern University, something—possibly hard study, lack of exercise, routine dinner menu—seemed to destroy my teeth. But I was always giving my teeth care, and the dentists of Chicago gave them attention. But, after serving a score of years as a Methodist minister, I was transferred many times, and often to parts where dentistry was but academically understood, and finally these teeth gave away, when they needed the best of attention. Then I read an advertisement in one of the great Chicago dailies, and it stated: 'Only experts are at the chair; we guarantee all our work.' 'That's the place to go,' I soliloquized, and after considerable difficulty to get an appointment, because of the great crowds seeking their services, I eventually landed in one of the dental chairs, and immediately the famous operator, bestenched with cigarette fumes, introduced the matter by saying: 'Reverend, you need not take up any of my valuable time; I well know, after a moment's examination, just what you require.'

"Then, without further comment, he sailed in—cutting, grinding, boring. I flinched, and in a desperate attempt tried to get out from under it, but he seemed to have the right-of-way, and along he went. Finally he changed burs, and that allowed me time to remark: 'Well, that's more pain than I usually have conferred upon me,' and with a sharp look and a dull bur, he said: 'Well, this is by the new system; it hurts a little more, but the work is better,' and away he dove at the work. It was four hours of this kind of torment and torture, when he helped me out of the chair. I was practically dead. I was taken home and was ever after an invalid. Mentally, I hope I was not injured, but, physically, I was ruined."

That was, indeed, a sad, yet only too common, affair of the dental office. Some dentists think they are not working unless the patient feels like jumping through the window, and, strange to say, that character of a dentist is often the busiest in the burg—possibly because he proceeds with that self-confident, daring way which impresses his patients with the thought: "Well, he goes about things as though he knows what he is doing."

What a pity that our profession, which was raised to its

present dignity by kind-hearted, unselfish men, should be caused to be degraded by such brutality, such merciless torture.

The same kind of a story was recently related to me by a young public school teacher, whose nerves were shocked after having had three pulps uncovered with the bur and then, regardless of their sensitive condition, immediately torn from

their position by the nerve, or pulp-broach. She said she could not describe the excruciating pain. She was unaware of having screamed, and all she could remember was hearing the dentist say: "Shut up; you'll drive away my patients."

"A lady friend came in and spoke kindly to me, and, after having a carriage take me home, I remained in bed five weeks, and after three years of care, I am gradually getting back my health andd strength."

It does not afford me pleasure to reprimand the practitioners of my profession, but if you will kindly ask yourself: "Does cruel treatment make people often neglect their teeth?" If you are undecided about answering, let me reply. I know of nothing more responsible for ill-kept teeth among the intelligent folk than the harsh and torturous dental service of heartless dentists; and of the latter kind there are still a large number. The reason for it lies back of the fact that too many young men go into dentistry for the money there may be found in that calling, or because some rich aunt or indulgent parents believe it might tone up the family to have a "Doctor" in that branch of the family tree. The result is, this young man, who was pushed into his freshman year, driven into his junior sessions and dragged through his senior semesters, goes out with his D.D.S., and in a half-hearted, half-fitted way begins to demonstrate what a failure a man is unless his heart and soul are in his work.

Now, what has phsychology taught us along the lines of what shock can do to the system? The optic nerve has a major part to play in this terrible drama, and so it does not do to display too many instruments. Keep them out of sight, especially the forceps and other instruments which will spur the imagination to build up terrifying pictures. In the best operating rooms of advanced medical colleges, all instruments, all elements or emblems of the surgeon's craft, are kept in a small room adjacent to the clinic room. The result is that, with a kind hand, a soft, encouraging voice, the patients are carefully arranged to undergo the task of the operation.

The eye, on seeing the instruments, immediately associates them with pain, and in a moment the patient becomes fright-

ened and the nervous system becomes alert and timid and fearful, and, instead of having your patient calm, cool and self-possessed, you have permitted hysteria to come in, and death and tragedy come to reign in the operating room.

The eye, it seems, has become the main factor to control; hence, have your rooms pleasant, get fascinating and high-class art pictures in the rooms. Get good, soul-cheering reading matter, and do not permit such patrons as are waiting to "talk dentistry." See to it yourself, or have your office assistants or servants to steer the conversation to more cheerful topics. Keep religion, politics, and especially woman's suffrage, forty miles from the reception room.

While the eye is not the entire element to humor, I will direct attention to the fact that I was recently invited to a dental office in Chicago where, to my surprise, there was a skull—clean, well articulated one; to me, handsome and perfect specimen—on a polished table and covered with a large glass telescope. Now, this dentist is progressive in many ways and his writings, too, along certain lines, appeal to all of us; yet, this bony display, I hold, is neither confidence-inspiring nor proper in the dental operatory. The other pictures about his fine office, too, were of a high-class medical kind and, while they were antique and interesting to both him and me, yet they must have been absolutely gruesome to the timid, nervous, wabbling kind. Make your surroundings agreeable and please the eye, making harmony of tints, shades and colors, so your reception room and operatory will be attractive, though not gaudy.

The eye, too, drinks in a situation a million times more quickly than you think, and it contributes to the registration of pain three million one hundred and sixty-seven times more severe than some of us know. Do not show broaches, burs, knives, hatchets, chisels, saws any more often than is absolutely necessary, and prepare the timid mind to receive the sight of the broach by speaking of it in a kindly way, and then, if you choose, you can show it; but impress them that, while it may hurt some, and that they should try and endure a little, yet that you would not inflict any more pain than was abso-

lutely necessary, and that you will stop working with it if it should hurt too much. With such a moment's preparation you will save a half hour's time. But usually it is best to explain all you are doing for the first simple fillings, or easy things you wish to do later when you have obtained their confidence, by honest, careful showing, and even demonstrating, why the remaining work will go on with speed, and the patient will leave the entire affair in your hands. Then keep their minds off and away from dentistry. Speak, if you must, of pleasant local things. Praise some good attempt to found a public library, a play ground for the children, or encourage the building of the new city hall, but be careful in choosing the subject. Let them advance the theme and do not invite a topic which may provoke discussion.

The effect of, that eyesight which is so exceeding quick in the fearful mind I had well demonstrated when a boy. A neighbor of ours loved honey, but he despised bees—like the devil hates holy water—yet his wife induced him to have a few hives in the apple orchard. He consented—all good husbands consent—(only blossoms were on the trees and the neighbor had invited me in), the bees were busy, and suddenly I heard a shriek from him. He called out: "There is a bee after me," and sure there was one on the trail and at the same second that he saw the bee light on his superciliary ridge, he dropped on the sod, and, to all outer appearances, he was dead. We carried him to the porch of the house and the doctor called. After laboring for three hours, he was revived. The doctor said it was the poison of the bee which brought on the trouble. I saw the entire rural clinic and shock, in that orchard and, even when a boy, I believed it was absolute fright induced by having seen the object, the bee—not the broach in this instance—though the thought of the broach-like stinger that produced the shock. The eye saw the terrible insect; in a second the fear became fright and fright turned to terror, and it, in turn, completely unbalanced the mental equilibrium, and the shock was the sequence.

The following substantiates my boyhood idea that it was

fear and fright, and not the sting, which near killed our neighbor:

LONDON, August 27.—(Special Cable Dispatch.)—That the sting of a bee may, in certain circumstances, prove fatal within a few minutes is shown by the death of W. M. Rhind, a builder, of Fulham road, who died almost instantly after he was stung. Mr. Rhind was taking a holiday at Kirdford, Sussex, and, accompanied by a boy, he went mushrooming. He was stung on the left temple and almost immediately collapsed. As he fell to the ground he pointed to his temple and said: "Stung." The boy ran to the nearest house to get some ammonia, and when he returned with help Mr. Rhind was dead.

At the inquest the medical evidence showed that the heart and lungs were congested as the result of the shock to the system. It was stated that Mr. Rhind, who was a robust man of about forty years of age, was afraid of the bees, as he had been severely stung when a boy.

"It is remarkable, indeed, for death to have taken place so soon after the man received the sting," said a medical specialist. "The only explanation is that the shock was made overpoweringly acute by reason of an overmastering dread of a sting. Just as unexpected good news has proved fatal almost instantly, so a bee sting—a little thing to a normal mind—could be fatal, if the fear that accompanied it was sufficiently strong."

Now, the argument I wish to present is: Do not let your patients who fear the bee (broach and drills) remain under this mental reign of terror. Teach them that these things are your servants and that you will use them with gentle kindness.

COMMENT

The following is part of an editorial by Dr. N. S. Hoff, of the *Dental Register.* In his usual practical way, he enumerates a few of the blessings of being a dental journal reader:

"Fortunately the dentist pays his money out so gradually —(the subscription)—that it never seems a burden. He gets much out of his literature that has no tangible values. He

does not turn all the knowledge he obtains from this source into money, at least not right away. He gets a certain amount of culture from careful and systematic reading that is invaluable. It keeps him in touch with the general activities of his profession, which causes him to have a broader sympathy with it, and makes him careful of its good name, and it also interests him in all other persons who are practing his profession. It is a fine thing to know the men in the profession who are doing things and telling others, through the journals, what they have discovered. It is like getting a letter from home to read the contributions of our friends and the men whom we perhaps know only by their contributions to our journals."

Can you afford to be without the professional literature? If you can, why the public in your community is the loser and you do little to advance your profession, for, if you took the dental journals away—can you realize the loss in having no medium for communicating the experiences and discoveries and inventions? But why discuss this self-evident fact—yet these are the kinds which require the strongest arguments. If it were some fake proposition, some "get rich quick" scheme, why little argument would be necessary, for when it comes to biting easy and taking bait, hook and all, the dentists are without equal or rival.

So here, once more, take Dr. Hoff's advice and, incidentally, my suggestion, and support your dental journals, and by support we mean, pay your subscription in advance and make it possible to publish a journal which costs thousands a year. In a Fraternity House I saw the motto hanging on the wall:

LOOK UP
CHEER UP
SMOKE UP
PAY UP

It is a safe wager it was an editor who added the last line.

ORIGINAL CONTRIBUTIONS

THE ORO-NASAL CAVITIES DURING ADOLESCENCE

BY DR. A. A. MUMFORD

[This paper, read before the Manchester Odontological Society, is a new and English view of the dental problem. Read it.—EDITOR.]

I was taught, early in my college life, that there were at least two reasons which justify a man in opening a discussion at a learned and scientific society. One was that he had made a sufficient study of some particular object that he was able to bring forward for the consideration of his fellows, and some new contributions to the general stock of knowledge. The other was, that, being desirous of acquiring fuller knowledge himself upon the matter in hand, he sought, by means of discussion, to evoke some of the current knowledge he required upon the matter from those able and willing to enlighten him. I confess it was the latter reason which urged and encouraged me to open a discussion at a dental society on the Oral-Nasal Cavities in Adolescence.

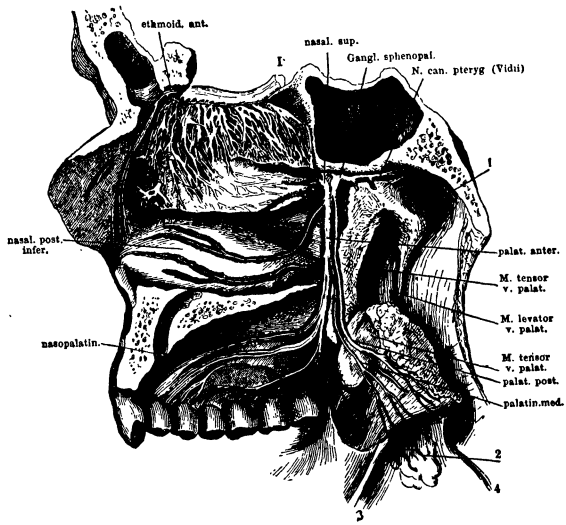
Not only is the physiological efficiency of this part of the human frame an object common to the medical and dental professions, but also, by the time adolescence has begun, these cavities, and the annexes and dependents, often afford a living record of many past grave disturbances to health; a record which is of great value in estimating the amount of stress, both physical and mental, to which the still rapidly growing organism of youth may safely be subjected.

Higher education is intended to produce a definite strain upon the child, for strain is the physiological result of striving. It is only within quite recent times that educational authorities have realized and acknowledged that it is their duty to see that the stress imposed is not so great that the striving becomes in-

jurious, or of such a nature that the natural vigor of oncoming manhood and womanhood cannot readily meet and receive benefit therefrom.

This consideration leads me at once to the very heart of my problem. What are the available standards for measuring bodily vigor and mental power?

STANDARDS OF PHYSIQUE AT PRESENT IN USE.—The standards hitherto adopted, in addition to scholarship attainments, have mainly consisted in—



1. Age.
2. Height, weight and chest-girth.
3. Degree of development of the several organs and tissues of the body.
4. Period of eruption and state of development of teeth.

If this last be extended so as to include, not only the date of eruption, but also the method of implantation of the teeth on the alveolar arch, and be still further extended to the study of the general condition of the oro nasal cavity and its annexes, I venture to claim that it provides a standard of equal, if not

greater, value than any of the others, and that no summary of standards of physique can be anything but partial and incomplete which does not include a very adequate statement of the physiological efficiency of the oro-nasal cavity, both from the medical and the dental point of view.

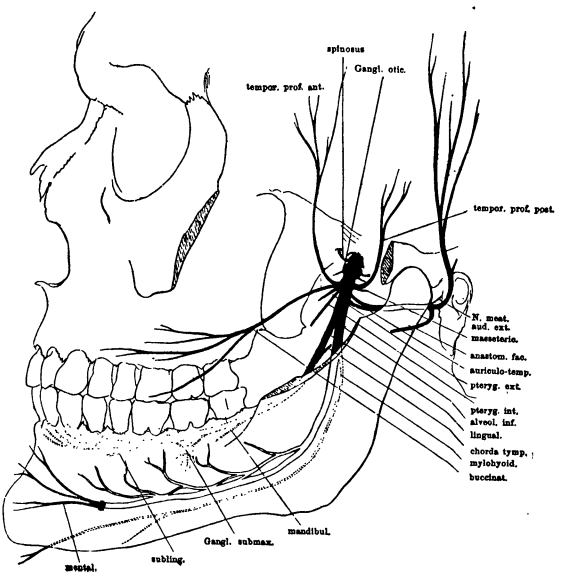
Information regarding physique, or the capacity of energizing, to be derived from a consideration of the oro-nasal cavities, can be derived from a study of—

1. The masticating mechanism of the mouth.
2. The articulatory mechanism of the tongue, the roof of the arches of the mouth, the implantation of the teeth, etc.
3. The respiratory efficiency of the nose.
4. The perfection of the protective mechanism of the salivary apparatus and of the nasal secretion, which secure, by means of their cleansing properties, the freedom of the oral and the nasal cavities from such foreign bodies as the various forms of germ life which invade the mouth and are capable of penetrating the natural defences by attacking and injuring the subjacent tissues.

It will be convenient to postpone the consideration of the structural modifications of the oro-nasal cavity of adolescents, which are available as a record of past weakness and ill-health, till we have more fully considered its physiological efficiency.

The perversion of function which diverts the current of respired air from the nasal channel and directs it through the mouth, is the cause of much injury to the organism. In the first place, the saliva, which is needed for the cleansing of the oral cavity by dissolving, digesting or removing the debris of food, and for neutralizing any products of fermentation set up by the growth of bacteria or fungi which have been retained in the mouth, is utilized for the moistening of the inspired air, and, therefore, diverted from its proper use. Acids are left in the mouth undiluted and unneutralized to pursue their evil effects. They set up a gingivitis, or boggy and inflamed condition of the mucuous membrane of the mouth, and attack the enamel of the dentine of the teeth. Moreover, while the saliva has been called away from its proper work to moisten the air

and so to do more or less imperfectly the work of the nasal secretion, this latter has been left unutilized; and for it, as for the idle hands of children, Satan finds some mischief to perform. Its secretion is disturbed in amount, and probably also changed in chemical and vital composition. Like all mucuous secretions. its decompositive products are very irritating, and prepare the nasal mucuous membrane for bacterial growth. A local inflammation, or catarrh, is set up, which spreads through the whole oro-nasal cavities. It has repeatedly been shown



that these cavities, when disturbed in their functions, afford a highly convenient breeding ground for all sorts of bacteria, which, when they have once gained a foothold, can only be dislodged with great difficulty. Some years ago several severe cases of diphtheria occurred in a public school in a certain district, and one or two of them proved fatal. As they were mainly confined to one particular class in a particular school, swabs were taken of the secretions of the throat of all the children in that class, and all suspicious cases excluded. In spite of such

precautions, the epidemic, though limited in range, still continued. At a later period of the epidemic, two children were brought into my consulting room suffering from some minor ailment—I think anæmia. As I was about to dismiss them, the mother pointed out that the elder child could not get rid of a cold in the head, from which she had suffered for several months. On a fuller examination, I reconsidered some excoriation on the edge of the nostrils, to which I had previously directed very little attention, and I then further noticed some slight tenderness of the glands in the side of the neck. Illumination of the interior of the nostrils revealed the presence of a suspicious flake covering the nasal mucuous membrane. I took a swab, which, on examination, was found to contain diphtheria bacilli. Subsequent inquiry revealed the fact that the child attended the same school and was a member of the same class as the children who had suffered from diphtheria, also that her nasal catarrh had commenced before the occurrence of the fatal cases. At an early period a swab had been taken of the secretion in her own throat, as well as that of her comrades, with apparently negative results. No attention had apparently been directed to the condition of the nose. It is probable that this anæmic and slightly ailing child, who had been mixing with her companions for several weeks, was the original source of the epidemic, or, at least, that she was the cause of its continuance, for, after her removal and isolation, no further cases occurred.

Further, children are frequently brought to the out-patient department of the various children's hospitals, with the medical history that they have never properly recovered health after an attack of pneumonia, or measles, or whooping cough, occurring two, three or even six months previously, and in whom no trace of persistent lung trouble can be found. It seems that in many of these cases the condition of aggravated debility is kept up by persistent pharyngitis. In a good many such cases I have had bacterial examination made of the pharyngeal secretion, which can readily be entangled on the mesh of a sterilized platinum snare, and, in quite a number of cases, the

pneumo-coccus or other specific bacillus has been found. With adequate treatment of the pharyngitis the debility has disappeared and the child regained his or her previous health.

There is a further reason for laying stress on the importance of a healthy, if not sterile condition of the pharynx, which, being closely related to the faculty of speech, is of great school importance. It is the remarkable tendency of these catarrhal throat troubles to spread to the Eustachian tube, and cause mild as well as severe forms of deafness. One of the commonest causes of poor attainment in school work, as well as of unnecessary strain, is imperfect hearing. Now, if we are to control the bacterial growth that produces the pharyngitis and deafness, we need to restore both the cleansing mechanism of salivation and the disinfecting process of a cross ventilation, which depends on a free nasal respiration. The best way to purify a room is to wash it. Nature has provided for the secretion of three pints of saliva daily to wash the oral cavity and the pharynx. If the teeth are crowded and badly placed, the washing of the pharynx, as well as the oral cavity or apartment in which they are situated, is interfered with, and a condition of affairs is allowed which contributes to the maintenance of pharyngitis and deafness.

In addition to washing, we need drainage; and it is by the interference with free drainage that enlarged tonsils and adenoids exert some of their most injurious effects. They prevent disinfection, both by interfering with efficient cross ventilation and by impeding proper swilling of the cavities in which they occur. I admit that nature is often very tolerant, and a state of affairs may often persist in the oro-nasal cavities which, if the present opinions of man were the sole governing agency of life, would cause great havoc to health; yet I think we are flying in the face of Providence, as expressed in the established rules of modern sanitary science, if we acquiesce in the persistence of imperfect washing, draining and ventilation of the oro nasal cavities. For this reason, based on a study of actual results of neglected mouths, it is my opinion that overcrowding and overlapping of teeth is a common obstacle to the cure of

pharyngitis, and is therefore a contributory factor in the maintenance of semi-deafness.

Oliver Wendall Holmes once wittily described undertakers as members of the post-medical profession. May I describe such medical officers of schools as are concerned with the supervision of children during adolescence, as members of the post-dental profession, or at least of the post-dental contingent of the joint medico-dental profession, for they frequently have the opportunity of seeing some of the ulterior effects of activity or inactivity on the part of their dental colleagues. As a member, then, of the post-dental contingent of public medical service, I should like here to record my appreciation of a vast amount of excellent and well-conceived work of colleagues who have made dental surgery their particular study, and of the ultimate value of this work in guarding or restoring the physique of growing boys and girls. But such appreciation would cease to be sincere if they assumed the tones of flattery and adulation. It is quite compatable with the preservation of independence of judgment, and such raising of criticism as may lead to mutual enlightenment, not only upon the importance of the removal of decayed stumps and of teeth with incurable cavities, but also upon the ultimate effect upon the nasal pharyngeal drainage, of the retention of crowded and badly placed teeth. Concerning the former, I have often heard it stated, and have frequently seen the principle acted upon, that decayed temporary teeth had better be left, for their removal may impair the subsequent shape of the arch of the jaw. My experience among children of the poorer classes attending hospitals is that these teeth constantly provide a focus or breeding ground for all sorts of septic systemic infections of the body, and particularly that infectious state of the body which causes tonsillitis, rheumatism, heart disease and St. Vitus' dance. I think I am voicing current, enlightened dental opinion when I say that the shape of the alveolar arch is far more dependent on the cavity and muscular vigor of the tongue than on the presence of the decayed teeth.

Concerning the second matter, namely, the retention of ir-

regularly placed teeth, I gather that there is more diversity of practice among dental surgeons. I should like to urge the point of view of the school physician, that if we are to cure pharyngitis and its associated deafness, disinfection of the cavities and pharynx by means of a free washing by saliva of all crevices and corners which can harbor germ life must be secured, and that all overlapping and crowded teeth which interfere with the free movements of the tongue, and so with the swilling mechanism of the saliva, or which interfere with the efficient articulation necessary in all the higher branches of education, should receive mechanical attention.

It would be impertinent of me to refer in detail to the necessity for securing, where possible, adequate masticating powers, though I hope I may be pardoned in pressing the point that mastication does not consist merely in the crunching and division of food between two rows of opposing teeth, but that freedom of tongue movements is needed to secure adequate mixing with saliva, and adequate insalivation, like distinct articulation, may be materially interfered with by the presence of badly placed or overlapping teeth, which restrict the space within the aveolar cavity. It is, I believe, quite possible to regard the preservation of the teeth as an object in itself, and not as a means to an end.

This is also a matter which, in my opinion, should engage the attention of the scientific dental surgeon, and is a common ground for both medicals and dentists. I will not dwell on the matter on the present occasion, as I wish to hurry forward to my next point, viz., the information concerning physique and and bodily vigor provided by a study of the oro-nasal cavities of adolescents.

The evidence of physique may be considered in relation to the whole oro-nasal cavities and the annexes—the accessory sinuses of the face—or in relation to the more special point of view of the development and implantation of the teeth on the alveolar arch.

The information as regards physique, which is derivable from the contour and condition of the sinuses of the oro-nasal

cavities, is closely connected with the freedom from catarrhal inflammation and consequent obstruction of the openings of these sinuses; for, if their internal apertures are obstructed, the sinuses within the bones of the face are not properly developed. The cheek bones remain flattened and depressed, a common association of cardiac weakness. The eyeball does not undergo its normal development from the flattened to the globular form. The development of the ear may be interfered with, owing to the blocking up of the eustachinan tube. Thus, not only does the facial physiognomy suffer, but the development of the eye and ear are interfered with.

The outside appearance of the external openings of the oral and nasal cavities, together with their surrounding and supporting structures, also affords a very reliable index to bodily vigor. The mouth affords some expression of the degree of development of digestive powers, the nose affords some expression of the degree of development of respiratory powers. A vigorous personality needs to possess both the respiratory and digestive activities in high degree.

Concerning the indications of physique afforded by a study of the development of the teeth, I should like to recall to your notice the early date at which the study of dental conditions was utilized for studying physique.

When, as a result of inquiries of the Factories Commission of 1833, it was evident that children of tender years were being exploited for the selfish purpose of the textile and hardware manufacturers, and the state had decided to control, if not abolish, the habit of allowing young children to work in the mills, it became necessary for government inspectors to be appointed to see that the law was obeyed. These inspectors were so frequently faced with biassed and unlikely statements of employers concerning the age of children that they became sceptical, even when birth certificates were brought forth. In many cases the masters and overlookers appealed to the height and bodily growth of the children for confirmation of their claim that the children had attained thirteen years. To render the opinion of the inspectors more scientific and authoritative, Sir

Edwin Saunders made statistical inquiries into the period of eruption of the permanent teeth among children attending numerous charity and residential schools, where the age had been investigated and approved for other purposes, and embodied the result of his inquiries in a booklet entitled, "Teeth as a Test of Age." I believe that he was the first to claim that the state of eruption of the permanent teeth afforded a much more reliable guide to age than do height, weight or other forms of bodily growth. This is now one of the established canons of bodily development, and I do not think any one of experience will seriously confute it. It is a rule I constantly apply to the examination of adolescents, and one of whose value I cannot speak too highly. We are sometimes accustomed to think loosely of statistics as studies in figures and tables, whereas the real origin and use of the term is something far more. It is the orderly arrangement of any kind of facts which may serve for the guidance of the state in dealing with its component members. Sir Edwin Saunders' little booklet of statistics on the period of eruption of teeth answers very fully the real meaning of the terms statists and statistician, for he gathered and tabulated his facts for the guidance of the state.

Even in grave perversion of bodily growth, such as severe rickets, or even dwafism and giantism, we are not often far wrong when, in deciding age, we turn our attention to the degree of eruption of the teeth. I believe some pigmy children from the center of Africa were shown through various centers of population in Europe as adult men and women, and it was the degree of the eruption of the teeth which finally brought the fraud, that these pigmies were not full grown, home to the exhibitors.

I do not claim for a moment that the teeth themselves are not affected by grave constitutional illness, but only that their growth and eruption obey the periodic laws of development of other parts of the body, and that if the departures from a mean or average date are carefully examined, these variations will be found to be limited in range and of such a nature that those children who show precocious development of their permanent

teeth will frequently also often show precocious development in other organs, including the circulation, the digestion and the nervous system, while those in whom the eruption of the permanent teeth is retarded will frequently be found to exhibit retarded development in other ways. The effect of constitutional illness in the shape and contour of the teeth is quite another matter.

In the matter of general body development, race is of great importance. Oriental southern races are almost uniformly precocious in their development. This, I think, is mainly due to the climate, for it is often noticed that when the races are transplanted to a colder climate their descendants soon lose this precocity. Mr. William Hall, a retired medical inspector of factory children, who has taken considerable interest in the development of the teeth of children, made a comparison of Jewish and Gentile children living in Leeds, and concluded that the more general suckling of children among the former was the main cause of the more perfect teeth as compared with the latter.

At the beginning of the period of industrial expansion in the North of England, brought about by the utilization of machinery for textile manufactures, Liverpool, Manchester, Leeds and Preston particularly were over-run by swarms of ill-fed, ill-trained, semi-civilized Irishmen, to such an extent that these often constituted one-fifth of the total population, and separate poor-law boards, known as Irish Boards, had to be set up for their supervision and care. Subsequently, this mass of imported material, amounting to some millions in the aggregate, was either absorbed or, more likely, extinguished by pestilence, and acute or chronic starvation. The very thriftlessness and lack of greed of these people kept the mothers at home to suckle their children, and the teeth and dental arches of poor Irish immigrants, to this day, are a testimony to the physical fitness of the stock from which they have come. Although educational authorities are faced with the problem of how to deal properly with an alien immigration, with deficient ideals in some respects, yet, as regards the care and suckling of young

infants, English mothers might well take an example from the Jewish and Irish ones. In comparing the state of the dental arch of young Irish adolescents with the Jewish adolescents, I have often been struck with the similar amplitude and regularity of shape, though I regret that I have not noticed whether there is a corresponding precocity in the development of the permanent teeth. Within recent times, owing to the increased demand for cheap female labor, and the unsettled condition of the labor market among the men who are heads of homes, both Jewish and Irish mothers fail, in increasing numbers, to keep their children at the breast. Hence, defective enamel of the crown and early caries of the six-year-old molars is becoming increasingly common among the children, and reduces them to the level of the English children.

I ask you now to turn your attention to the variation in the period of eruption of the permanent teeth, which, though comparatively small in amount, is of some considerable importance.

The period of eruption of the permanent teeth is generally stated to range over the following time:

	BOYS	GIRLS
Central incisors	7·5—1·4	7·0—1·6
Lateral incisors	9·5—2·1	8·9—2·1
Bicuspids	9·8—2·6	9·0—2·8
Canines	11·2—1.4	11·3—1·6
Second molars	13·2—2	12.8—1·6
Wisdom teeth	22·2 - 1·7	21·8—1·8

APPLICATION OF THESE FACTS TO MEDICAL INSPECTION OF ADOLESCENTS

In the medical examination of boys on their entrance to the Manchester Grammar School, I am accustomed to make a rough note of the state of eruption of their permanent teeth in order to gain some suggestion as to the state of their bodily physique. Altogether, I have examined over one thousand boys.

The school is, as you know, an old foundation, founded with the idea of providing high-class education up to University standard, free to all who desire it. Some half century or

more ago it was found that the funds were only adequate to provide for about 250 boys. If the number of applicants exceeded the number of vacancies, which was not always the case, enough boys to fill the vacancies were chosen as a result of inquiry and personal examination by the high master. In those days competition was not sufficiently severe for it to work out with any grave injustice.

Mr. Walker, about 1860, realizing the backward state of higher education in Manchester, desired to make the school more useful by obtaining permission to take in other boys who would pay fees. A scheme was drawn up and approved by the Charity commissioners to allow certain fee-paying or capable boys to enter the school, and thus the total number rose to 500. In this way the boys consisted partly of free scholars and partly of capitation or fee-paying boys, the education of the first group being provided entirely by the original foundation, and the education of the second group only partially so and partly by a fee which, by no means, covers the cost of the education. It has always been the tradition of the school, in selecting its free scholars, to pick out boys of promise, and consequently of some precocious development, and carry a considerable pronortion of them up to and through the university.

In order to raise the level of general education in the country, Mr. Balfour introduced a measure known as the Education Act, 1902, which offered special grants to such accredited public schools as would receive a certain number of free places to boys who have received their previous education at the public elementary schools. Since 1907 these have been generally known as free placers. This quite fell in with the tradition of the Manchester Grammar School, which had always thrown open its doors wide to such boys, and a common occurrence at the public function of the school is to hear men who have risen to high positions in church and state acknowledging that it was only by free scholarship at school and at the university they have been able to reach such positions of responsibility as have been opened to them. At the grammar school some 15 per cent of the vacancies have to be awarded to boys from public

elementary schools. After these 15 per cent places have been so allocated, any other vacancies in the scholarship list are thrown open and are no longer restricted, but can be awarded to boys who have been trained at other than public elementary schools. It nearly always happens that more than 15 per cent of the places are gained by public elementary school boys. There is no distinction in the school itself between the two classes, other than that all scholars are honorably marked with an asterisk in the form lists and a high standard of work is expected of them.

Thus we have several sources from which the school is fed:

A. Scholarship boys from secondary schools.

B. Scholarship boys from public elementary schools, or free placers.

C. Capitation boys from secondary schools.

D. Capitation boys who, having been at public elementary schools, but whose guardians are able to pay the school fees. They are eligible for subsequent award of free places as the result of examinations, though they have already been awarded one at the entrance to the school.

The total number of boys in the school has greatly increased in recent years, and now amounts to 1,000.

I have made it my business to make full inquiry into the physical condition, the mental attainments and the bodily powers of these scholars in the school life, both in class and outdoor games. It has been found that these free scholars constitute the larger proportion of the pick of the school, not only in school work, but in the various athletic games.

As an illustration, I may state that 50 per cent of the free scholars pass the matriculation examination of the Northern Universities Board, though only some forty or fifty boys of the whole school annually pass on to the different universities.

When we come to see what bearing the facts of dental and oral development have upon our estimate of the present vigor and health of the child at a particular age, we soon discover that vigorous growth of the mouth and teeth in the earliest stages in life is a very valuable expression of power of the whole

body. If there has been limitation of growth in others, and particularly in such a highly organized part as the nervous system. There may, however, be such natural divergence between the degree of development of different tissues as is sufficient to be recognizable, so that in some individuals the muscular, and in others the nervous system, predominates. Other divergencies, which are artificial and due to disease, are also found.

The great difficulty in all investigations into the relation of the teeth to physique is that the results are remote, rather than immediate. For this reason, I have not looked for the relation of decayed teeth to illness, but of healthy teeth to vigor. Of the school children attending public elementary schools in 1911, some 4r per cent have one or two decayed teeth. I have concerned myself purely with the condition of the 6th year molar and the 11th year.

[THE END.]

EYES, TEETH, AND EYE-TEETH

BY DR. MACWHINNIE.

[According to the *Literary Digest*, we dentists are wrong in calling off the relationship between the name eye-tooth and the eye. If we would leave old name, eye-tooth, stand instead of anatomically calling in canine, and professionally cuspid, people would value dentistry more highly, since, if that tooth affected the eye, why they would take care of it. Live and learn.—EDITOR.]

That the eye teeth are well named, and that ulceration or other functional disturbance of these and the other teeth often manifests itself by trouble with the eyes, is asserted by Dr. A. Morgan MacWhinnie, of Seattle, in a paper on "The Teeth and Their Relation to the Eye," printed originally in the *New York Medical Journal* and now published in pamphlet form.

Back of every case of eye disturbance there is a physical derangement to account for it. Very many times it is so obscure that one is quite apt to overlook the underlying cause and to confine reasons to local treatment. If it were not for kind

Nature so frequently coming to our aid, many are the patients we would fail to benefit. We should remember that the underlying cause is of the greatest importance, and neglecting its treatment is a very serious mistake that we may, sooner or later, have to cope with in an aggravated form. The exact relationship that accounts for the many eye changes seen is often due to the obscure conditions of the teeth. I say obscure, for many are the cases that are seen in which no local manifestations of any diseased teeth are evident, only becoming evident when the *x*-ray or exploration is used. * * * That some relationship seems to have been thought of for a long time is evident from the fact that we have the so-called eye-tooth (upper canine, cuspidate). Many are the cases reported of spasm accommodation, the foundation of which, when discovered, is in the root of a tooth socket. * * *

We now realize that the local manifestation and the physical derangement may be widely separated. The exact relation by which the changes are produced in many of the eye cases is very obscure, the intervening, or carrying tissue, not apparently suffering in the least. It appears that it is the terminal filaments of nerves, or lymphatics, that are the carriers, and the lowered resistance at their terminals are occasions for this disturbance.

Several cases were reported by Rogers, where, in filling a tooth, a brooch was left in; this caused hemorrhages of the eye. Temporary blindness has been reported by others. One of the cases which I wish to report is one in which there was a great amount of fatigue, the patient not being able to use his eyes over ten minutes at a time, in which case the teeth were apparently all sound.

CHIEF PAUL'S GOLD TOOTH

[Continued from page 331 of the December Issue]

"I want to talk to you, so stand right where you are,' said he.

"And Jack giggled hysterically, and nudged me.

"'Now then' began the old man, squaring up to the uneasy Indian, 'you think you've got a gold tooth, do you?'

"'Ya—um—gotum tooth,' answered Chief Paul slowly.

"The dentist took the grip from the boy, and opening it, extracted a small parcel, from which he ostentatiously began to remove the soft paper.

"Deliberately the fold after fold of paper was removed and put carefully in his pocket. Then at last upon the palm of his hand a glittering set of real gold teeth, a perfect piece of advertising work.

"The hunters crowded closer. And the chief with a grunt of amazement reached forth his paw.

"But the dentist knocked it away.

"'This for big hi-yu skookum chief down river,' he said solemly.

"Chief Paul straightened up stiffly, 'Me big chief.'

"The old man held up a finger and shook his head. 'You one tooth chief. No good.'

"'Ugh,' grunted the chief. And he turned on his toes and gazed steadily at the gem.

"'Melikeum, buyum one black fox,' he said presently, as the dentist began to wrap it up.

"'No,' answered the old man.

"'Two black fox,' returned the Indian immediately.

"The dentist shook his head.

"'Melikeum, t'ree black fox,' bargained the chief desperately. For in a moment the precious thing would be out of sight. 'T'ree black fox,' he repeated, holding three fingers under the old man's nose.

"The old dentist held up four fingers.

"'Nogotum,' and the Indian shook his head emphatically.

"'Get them, show me what you have,' said the old chap hastily.

"'Say, daddy,' said Jack, 'you ain't going to pull all his teeth?'

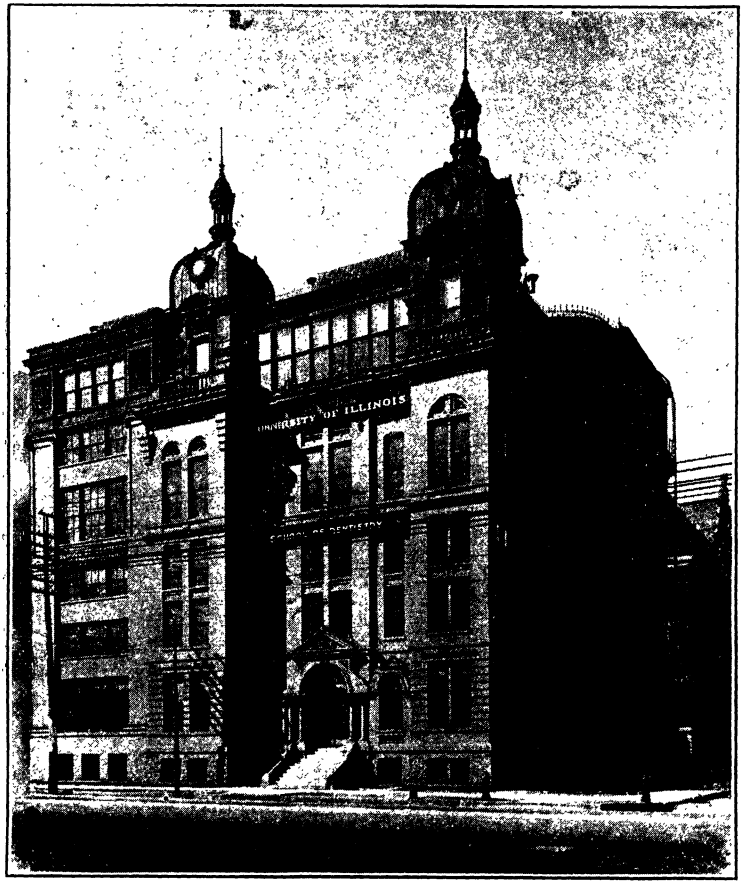
"His father looked thoughtfully at him. 'I guess not. He wouldn't stand for it. But I'll make the trade. I'll ease his mind,' was his answer.

[To be continued]

POST GRADUATE COURSE

[This appears to be worthy of consideration.—EDITOR.]

Beginning Monday evening, February 8th, and continuing every Monday evening through February and March. The



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I. LOCAL ANESTHESIA.

1. General principles governing local anesthesia.
2. Infiltration and conductive anesthesia.
3. Choice of drug.
4. Novocain; its toxicity, irritability, etc.
5. Preparation of solution.
6. Selection of syringe and needles.
7. Technique of injections, illustrated by stereopticon and actual demonstrations on patients. These demonstrations will include the application of novocain in major and minor oral surgery, extraction of teeth, pulp removal, cavity preparation, etc. —*Frederick B. Moorehead.*

II. NITROUS OXIDE AND OXYGEN

Anesthesia and analgesia.

A discussion covering the use of nitrous oxide and oxygen for anesthesia and analgesia purposes, with demonstrations illustrating technique, selection of outfit, etc. Application of these agents in cavity preparation, and pulp removal illustrated on patients. —*Louis Schultz.*

III. ENAMEL CLEAVAGE—(ILLUSTRATED BY STEREOPTICON)

1. Structural elements of enamel; their arrangement and character of the tissue.
2. Effect of caries on the structure of the enamel.
3. Cleavage of enamel; the relation of the cutting instruments to the structural elements of the tissue in cutting enamel.
4. The arrangement of the structural elements in a strong enamel wall.
5. The preparation of typical cavity walls.

—*Frederick B. Noyes.*

IV. THE MOUTH AS A FACTOR IN PATHOGENESIS

1. Irritation.—Difficult to measure harm of irritants.—The delinquent boy and girl.—Impacted and unerupted teeth, irregular teeth, contracted arch, adenoids, faulty breathing, etc.—Tartar, gingivitis, endarteritis, etc.—Ulceration of mucosa.

2. Neoplasms.
3. Malformations.
4. Infection.
   (*a*) Granulomata; tuberculosis, syphilis, actinomycosis, etc.
   (*b*) Acute infections; danger; relation to deep cervical fascia, glottis, maxillary sinus, etc.
   Sub-periosteal abscess; necrosis, ankylosis, septicemia, etc.
   (*c*) *Sub-acute or chronic.*
   Patients "below par."
   Pyorrhea.
   Bone cavities; roughened apices, etc., illustrated by stereopticon.
   The interpretation of *x*-ray plates and films; the question of resection of root ends, currettage and extraction of teeth. When shall teeth be removed and when shall resection and currettage be resorted to? Infective cysts, joint lesions, rheumatism, neuritis, eye infection, ulcers of stomach and duodenum, appendicitis, etc.

The relation of local foci and infection to general disease is doubtless the most acute and serious question in medicine today. The jaws and tonsils furnish the greater number of these foci. The dentist has a very definite and vital relation to the question of infection and, therefore, a very serious responsibility to face.

This whole matter will be carefully discussed in detail and brought close to the general practitioner.

—*Frederick B. Moorehead.*

V. RELATION OF CERTAIN METABOLIC DISTURBANCES TO THE OSSEOUS SYSTEM AND TO THE TEETH

(*a*) A discussion of the function of the thyroid and thymus glands, the hypophysis and other glands furnishing internal secretions.

(*b*) The changes occurring in the bones and teeth in rachitic, scurvy, etc.

(*c*) Diet and the subject of "vitamines."

(*d*) Results of experimental studies with demonstration.

—*D. J. Davis.*

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Silver Solder, per oz.	.90
8K Gold Plate, per dwt.	.85
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